**Science Lesson Plan**

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| **Zoey Dwiggins** | |
| **Lesson Overview** | |
| **Title:** | Sounds All Around |
| **Big Idea/Focus Question:** | How is sound created and how does it travel? |
| **Grade Level:** | First Grade |
| **Common Core Standards:**  Science:  Science:??  Reading:  Writing:  Math:  Social Studies:  3pts | Science: Sound can make matter vibrate, and vibrating matter can make sound. (1-PS4-1)  Science: Sound can travel through some mediums better than others. (1-PS4-2)  Reading: Use the illustrations and details in a text to describe its key ideas. (1-IKI7-2)  Writing: With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (CCSS.ELA-LITERACY.W.1.8)  Math: Represent and interpret data. ([CCSS.MATH.CONTENT.1.MD.C.4](http://www.corestandards.org/Math/Content/1/MD/C/4/))  Social Studies: Collaboration requires group members to respect the rights and opinions of others (Ohio Common Core, Government strand, Civic Participation and Skills, #9). |
| **Instructional Objectives:** Kid-friendly “I can” statements for each standard.  Science:  Science:  Science:  Reading:  Writing:  Math:  Social Studies:  3pts | Science: I can create vibrations with objects.  Science: I can explain the difference between pitches and amplitudes.  Science: I can describe how sound travels differently through mediums.  Reading: I can describe the pictures in the story to explain the key ideas and details.  Writing: I can write about my experiences with sound.  Math: I can measure out water with measuring cups.  Social Studies: : I can cooperatively work with my group mates to discuss and analyze sounds, working together to answer the “Big Idea”. |
| **Instructional Materials, Equipment & Technology:** List the texts, materials & technology the teacher & students will use during the lesson. 1pt | * SmartBoard * Desktop computer/speakers * Big post-it sticky notes (4) * Small sticky notes (4 for each student) * Balloons (2) * Rubber band * Plastic containers (3) * Clear plastic wrap * Rice * Beans * Marbles * Rocks (2) * Bucket * Water pitchers (2) * Mason jars (4) * Measuring cups (4) * Metal sticks or spoons (4) * Slinky (1) |
| **Safety Concerns:** List materials or parts of the lesson where safety will need to be addressed in the lesson. 1pt | * While creating music with the spoons and the glass jars, it is possible that glass could break and therefore cause cuts/injuries. * Rice and beans could cause a choking hazard if a child misused them and put them in their mouth. * Students could hit rocks too hard against their fingers if they aren’t being careful |
| **Possible Misconceptions:**Briefly describe the possible misconceptions students may have about the concept addressed in this lesson. 2pts | * Hitting an object harder changes its pitch. * Loudness and pitch of sounds are confused with each other. * As waves move, matter moves along with them. |
| **Lesson Procedures** | |
| **Engage** | |
| Purpose:  ❏   to assess and activate prior knowledge.  ❏   to capture students’ interest.  ❏   to pose questions based on the objectives that the students will try and answer during the explore phase.  2pts | |
| **Activities:** How will you accomplish the purpose above (reading, demonstration, video, crazy statistics, interesting pictures)? Note if activities are independent, partners, small group, or whole class. 2pts | Activities:  To engage the students I am going to start the lesson off with a listening sound activity. To do this the students will sit in their small groups at their tables. I will instruct the students to number their paper 1-8 with spaces for answers. I will then go to the computer and sample 8 different sounds. I am going to play sounds with diverse pitches that we will go over in the explain portion of the lesson. By doing this the students start thinking about sound and how diverse it can be. I will ask the students guiding questions about sound and explain to them will go over the sounds later in the lesson. |
| **Guiding Questions:**  What questions will you ask to guide the activities? 2pts | Guiding Questions:   * What is sound? * How do you think sound is created? * How do you think sound travels? |
| **Assessment:** How will the students sum up or assess what they have done in (teacher observation, small group discussion, class discussion, drawing/chart/table/diagram, notebook/journal, lab write-up, oral presentation, poster, quiz/test)? 2pts | Assessment:  I will be assessing the students on their previous knowledge of sound. I will assess their answers to see how familiar and how much background knowledge they have on sound. |
| **Explore** | |
| Purpose:  ❏      to decipher what hands-on/minds-on activities the students will be doing.  ❏      to decide how students will use the materials for discovery.  ❏       to ask the big idea/focus question to guide the students’ exploration.  ❏       to gage responses to questions asked about the exploration. 2pts | |
| **Activities:** How will you accomplish the purpose above (build models, collect data, make and test predictions)? Note if activities are independent, partners, small group, or whole class. 2pts | The group of tables (five people at two tables, and four people at two other tables) will be divided between four different activities and the tables will rotate to every activity.   * The first station: See the Vibrations!   + At this station the students will be exploring the  vibrations they see by hitting a pan with a metal spoon and viewing the vibrations transfer to the rice, marbles or beads resting on the plastic wrap covering the containers. Students will notice that hitting the pan creates a sound, and this vibration will cause the rice, beads, or marbles to move. Clear plastic wrap will be on top of the plastic containers. Students will be observing how the rice, beans, and marbles move and, exploring the relationship between sound and vibration. * The second station: Sounds rock!   + At this station students will be doing an exploration activity on sound traveling through different mediums. For the activity students will hit rocks together to show vibrations traveling through solids. They will explore this in water as well. I will have a bucket with water in it that students can tap the rocks together underwater and above water. The idea is that students will be able to see how sound travels through different mediums. * The third station: Balloon Messages!   + At this station we will be demonstrating how sound travels through air. To do this we will blow up 3 different balloons with different amounts of air inside. The students will then put the balloon to their ear and have their science partner tap or make a noise directed at the other side of the balloon. This will demonstrate how sound moves through air into someone's ear. By having 3 different balloon sizes with different amounts of air kids can see how this creates variations in the noise they hear. * The fourth station: Jamin’ Jars   + At this station we will be demonstrating how pitch works. To show this we will have each student measure out a set number of water and dump it into the jars and then the students will hit the jar with a metal stick and see the waves and hear the difference in pitches depending on how much water is put into each jar. |
| **Guiding Questions:**  What questions will you ask to guide the activities? 2pts | * Did you hear anything during the activity? * What did you see during the activity? * Did you notice anything happening? |
| **Assessment:** How will the students sum up or assess what they have done in (teacher observation, small group discussion, class discussion, drawing/chart/table/diagram, notebook/journal, lab write-up, oral presentation, poster, quiz/test)? 2pts | Teacher Observation (small group discussion)  After each of the activities the teacher assigned to that activity will ask the questions the guided questions above. This will gage what the students were able to observe and take away from the rotation activity. |
| **Explain** | |
| Purpose:  ❏       to allow students to share what they have discovered.  ❏      to introduce the vocabulary that connects to the learning.  ❏      to create questions or techniques that will help students connect their discovery to the concept.  ❏      to gage responses to questions asked about the explanation. 2pts | |
| **Key Vocabulary:** List the science vocabulary from the lesson along with the definitions. 2pts | * Sound: created by vibrations * Sound waves: the way sound travels through mediums * Vibration: Small, back and forth movements that cause sound * Mediums: A material for which sound can travel through (solid, liquid, or gas) * Frequency: how fast the sound waves move * Pitch: how high or low the sound we hear is based on the sound waves frequency * Decibels: a unit of measurement for sound, degree of loudness |
| **Activities**: How will you accomplish the purpose above (class discussion, taking minimal notes, creating diagrams)? Note if activities are independent, partners, small group, or whole class.  2pts | Utilize the powerpoint that will go through each Vocabulary term, each will go back to what we did in the explore sound stations and the teacher demonstration during the engage portion.   * Sound: reference the different sounds we heard during the sound stations, emphasize that sound is created through the vibrations (the rock hitting the rock, the vibration of our vocal chords, and hitting the table causing the rice to move) * Sound waves: emphasize that sound, to get from one location to another, must travel in the form of waves. We cannot see these waves but they allow sound to travel to our ears to hear the different sounds around us * Vibrations: when the molecules (particles) move back and forth quickly, this creates the sounds we hear (reference back to hitting the table, causing movement in the rice on the jar) * Frequency: how fast the waves move, causes variances in pitch (use slinky demonstration to show a higher frequency-> slinky closer together, lower frequency -> slinky stretched farther apart) * Pitch: this is the sound we hear as either higher or lower, based on the frequency of the sound waves (reference back to the water in the jars activity, how the sound we hear is either higher or lower based on which jar was more full and more low) -refer back to high pitch sounds from sound board * Amplitude: sound waves can be measured by how much energy they have, this creates a loud or soft noise (have students hit the table hard and hear the sound, and hit the tables softly and hear the sound) -refer back to louder or. softer sounds from the sound board * Decibel: a unit of measurement, degree of loudness (compare to how we measure shapes in inches, we measure how loud a sound is based on decibel. Show the students the decibel meter app on the phone (through the doc cam), show how when one makes louder noises, the meter, or decibel amount, goes up |
| **Guiding Questions:**  What questions will you ask to guide the activities? 2pts | * How were you able to see vibrations when we created sound during our sound centers? * What are the different mediums we can hear sound through? * What is an example of a high pitch sound we hear in everyday life? What about a low pitch sound? * What are some softer sounds we hear in everyday life? * What are some louder sounds we hear in everyday life? |
| **Assessment:** How will the students sum up or assess what they have done in (teacher observation, small group discussion, class discussion, drawing/chart/table/diagram, notebook/journal, lab write-up, oral presentation, poster, quiz/test)? 2pts | As we go through each guiding question after the vocab word, ask the tables to take 30 seconds to discuss with their science partners at their table to give us examples. After each break to discuss, write the examples on a paper where all the students can see on the doc cam. Use their examples to gauge their ability to connect the vocabs from the lesson, back to the activities and to various experiences of their everyday life. |
| **Elaborate** | |
| Purpose:  ❏      to achieve a deeper understanding of the concept.  ❏      to apply the new knowledge in their daily lives or a new situation.  ❏       to identify and correct any remaining misconceptions.  2pts | |
| **Activities:** How will you accomplish the purpose above (build models, collect data, make and test predictions-could be on a smaller scale, or even using technology)? Note if activities are independent, partners, small group, or whole class.  2pts | A teacher will read the story “Sounds All Around” by Wendy Pfeffer. During the reading the teacher will ask question that are listed below in the guiding questions and stop to make demonstrations that are included in the book. |
| **Guiding Questions:**  What questions will you ask to guide the activities? 2pts | 1. Can you feel your throat vibrate when you make a noise? 2. Can someone tell me what a sound wave is? 3. Can you think of a time when you sent a message to another person without using your voice? 4. Can anyone tell me what an echo is? When did you hear it? 5. Have you ever been underwater and made a noise? What was it like? 6. Can you think of a sound or sounds that keep us safe? 7. How do you think sound is measured? |
| **Assessment:** How will the students sum up or assess what they have done in (teacher observation, small group discussion, class discussion, drawing/chart/table/diagram, notebook/journal, lab write-up, oral presentation, poster, quiz/test)? 2pts | The students will talk at their tables about the story and come up with a sentence about the story that involves the vocabulary words discussed in the explain. Then the teacher will ask each table to share the sentence they came up with. |
| **Evaluate** | |
| Purpose:  ❏      to assess the students after the lesson is completed.  ❏       to allow students to demonstrate that they have achieved the science lesson objectives.  ❏      to allow students to summarize the big idea/focus question.  2pts | |
| **Assessment:** How will you accomplish the purpose above (teacher observation, small group discussion, class discussion, drawing/chart/table/diagram, notebook/journal, lab write-up, oral presentation, poster, quiz/test)? 2pts | Assessment: Around the room we will have questions written on large post it notes evaluating the student's knowledge of the our key vocab and concepts. The students will each be given four post notes and be instructed to put their names on the back. The teachers will read each question on the large post it note and the possible answer. Each teacher will give students time to think about their answers, and then stick their sticky notes on the answer they believe is correct.  After completing this activity, the teachers can look on the back of the post it notes and see which students were able to get the answers correct and which students may not have as strong of a grasp of the concepts taught.  1.The loudness or softness of a sound is determined by the amount of energy in the sound waves, or the \_\_\_\_\_\_\_\_\_ of the waves?   * Amplitude * Pitch * Size * Speed   2. Sound is created by particles moving back and forth quickly, called \_\_\_\_\_\_\_\_\_\_\_\_.   * Movement * Vibrations * Loudness * Pitch   3. Sound travels in the form of \_\_\_\_\_\_\_\_\_\_\_\_.   * Pitch * Sound waves * Amplitude * Light   4. The frequency of the waves, or how quickly they travel causes us to hear either a high or low\_\_\_\_\_\_\_\_\_\_\_\_.   * Movement * Frequency * Pitch * Decibel |
| **Differentiation**: Give a brief description of how you could differentiate the explore, explain, **or** elaborate lesson for:  ●  students above grade level  ●  students below grade level  ●  students who are English language learners 2pts | Students above grade level:   * Have students create instruments that has different levels of pitch, and different amplitudes (loudness/softness), give them a chance to demonstrate through creating * Use more scientific vocabulary (longitudinal waves, compressional waves, and mechanical waves) * Why do you think that sounds travel faster/slower in different mediums? |